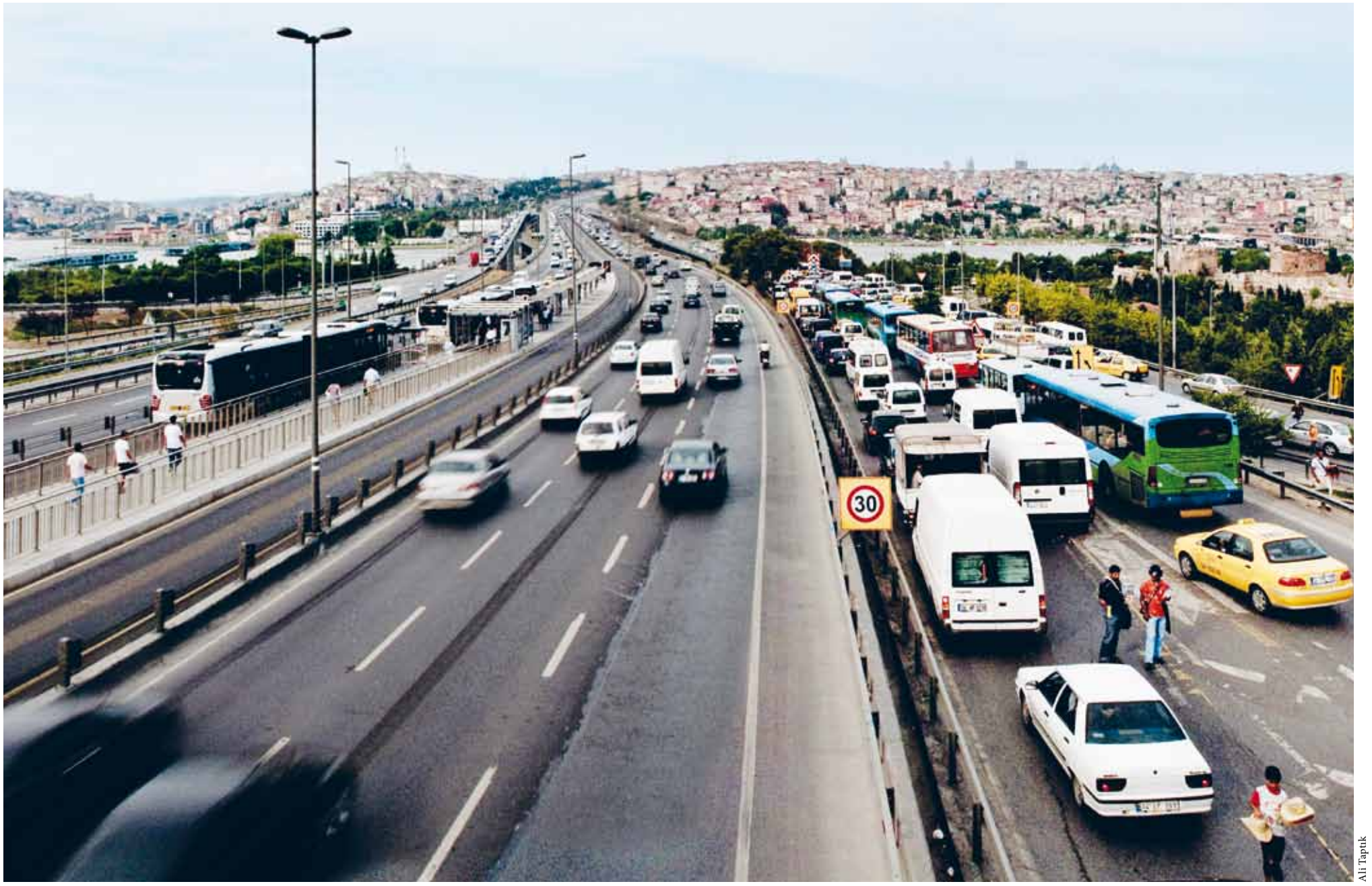
Philipp Rode

City making as climate policy

Book section

CITY MAKING AS CLIMATE POLICY

With cities contributing disproportionally to global carbon emissions, **Philipp Rode** describes how focusing on the core qualities of the compact city is the key to fighting climate change.



Ali Taptik

Carrying almost 440,000 passengers a day over 40.4 kilometres of designated bus lanes running on one of its busiest motorways, Istanbul's Metrobüs has successfully reduced travel times, and increased the use of public transport.

In 1986, one of the editions of the German news weekly *Der Spiegel* depicted a severe warning on its cover: Cologne's famous gothic cathedral was shown half submerged in an endless sea of water with not a single other building visible. The issue was titled 'the climate catastrophe' and linked the global environmental crisis not only to the great aspirations of mankind – Cologne's cathedral was the tallest structure in the world in 1880 – but also to the disappearance of a city, exposing its vulnerability to the forces of nature.

The cover was of course an exaggeration at a time when the public knew little about carbon emissions, climate change and rising sea levels. Yet it was in the mid-1980s that humanity's ecological footprint surpassed the earth's capacity. Since then, our massive ecological debt has continued to increase. Despite the establishment of the Kyoto Protocol in 1997, global carbon emissions have shot up by another 26 per cent and the global sea level is now expected to rise up to one metre by 2100.

We now know that cities and climate change are inextricably linked. The widespread acknowledgement of the risks associated with global warming and the need for urgent global action coincides with the global shift from a rural to an urban global population. Cities are vulnerable to a range of effects, of which the rise of sea levels, freak weather conditions and water shortages are among the most prominent. The United Nations estimates that no less than 400 million urban dwellers are exposed to risks associated with sea level rise. But although urbanisation brings a disproportionate hunger for development and consumption of the planet's scarce natural resources, well designed cities can offer a viable answer to the search for more sustainable lifestyles.

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Urbanisation is accompanied by excessive material consumption, more energy-intensive food supplies and ever-increasing flows of goods and people. Between 1950 and 2005, the urban population grew globally from 29 to 49 per cent, while global carbon emissions jumped from 1,630 to 7,985 million tonnes. It is now frequently stated that cities emit around 75 per cent of all carbon emissions. Some cities emit so much that they rank among entire countries, as is the case with Shanghai, which would place 25th in a global ranking of carbon output per country. While such statistics fail to recognise the complexity of linking emissions to a specific territory, they also mask how locally produced, exported and indirect carbon emissions are differentiated. It is true that most statements about city specific carbon production fail to recognise the complexity of assigning emissions to specific territories and how to differentiate locally produced, exported and indirect carbon. However, most estimates suggest that cities are responsible for a disproportionately higher share of global carbon output. Indirect emissions can have a particularly strong impact: for example when including the emission from air travel to and from London, aviation is the city's largest single source of carbon emissions, calculated at approximately 34 per cent.

About two-thirds of global greenhouse gas emissions are energy related, of which the top two sources, heating and electricity for buildings comprise 25 per cent, while transport and industry are responsible for 22 per cent each. By comparison, emissions from buildings in high-income cities typically account for 60 per cent, and transport for 30 per cent. It is transport emissions that are particularly worrying. Even within the European Union and its ambitious carbon reduction policy, transport-related carbon emissions have increased by a staggering 36 per cent between 1990 and 2006 while other key sectors have at least achieved modest reductions.

What is worse, carbon emissions from transport are increasing more rapidly in the world's fastest growing metropolitan areas. This is partly because some cities are

pursuing conventional models of modernisation, creating an infrastructure legacy matching those of the cheap oil period of the 1950s and 1960s. This politics of concrete and steel, celebrating urban motorways, flyovers and tunnels not only ignore the vast evidence that road construction leads to more traffic and longer travel distances rather than a reduction in congestion, but they can eventually result in the destruction of the city itself. According to empirical estimates for metropolitan areas in the United States, each new highway penetrating the urban core has led to a decline of central city residents by 18 per cent. Metropolitan regions that once embraced the automobile have become endless cities with cars demanding more space than ever before. Today, the São Paulo metropolitan region has more than 6 million cars, an amount that supersedes the total amount of cars in India in 2005; at the same time, the overlooked city centre, with its direct access and public transport links, has been abandoned by most middle-class residents and the city's leading corporations.

In cities, high standards of living do not necessarily entail consumption of an equally high level of natural resources. At their most basic level, cities follow the logic of any larger organism: they consume less energy per unit than smaller ones. By concentrating people, processes and interactions, cities not only vastly increase social and economic opportunities but, up to a certain size, they benefit from the economy of scale in infrastructure and can optimise the efficiency of a broad range of services. A recent comparison of German cities has shown that on average, the amount of road surfaces or the length of electric cables increase only by 80 to 90 per cent when the population doubles, instead of the expected 100 per cent.

This translates into a better environmental performance of cities compared to their regional context: New York City produces only 1 per cent of the country's overall greenhouse gases, but is home to 3.7 per cent of its population. Even when considering all indirect and embedded carbon emissions, urban living outperforms suburban and rural lifestyles in rich nations, as the Stockholm Environment Institute has recently shown for the United Kingdom. There are also enormous differences between cities: most cities in the United States have three to five times the gasoline consumption of European cities, despite offering at least the same quality of life.

A closer look at specific factors contributing to carbon efficiency reveals the dynamics of how a certain compact urban territory can outperform its hinterland or sprawling spatial configurations. Two decisive factors are reducing energy consumption associated with buildings and transport. The amount of energy per square metre needed for heating and cooling a building is highly dependent on the basic building configuration. For example, joint research by Urban Age and the European Institute for Energy Research has shown that detached houses with the same insulation standards and location in moderate climates require more than three times the energy per square metre compared to multi-storey city blocks.

In the case of transport, the positive 'urban effect' is two-fold. Firstly, it means a closer proximity, and, secondly, it equates with a shift towards more environmentally friendly modes of transport. Compact city configurations generate high levels of accessibility while reducing travel intensity. Barcelona and Atlanta, for example, have similar populations but their built-up territory is vastly different at 162 and 4,280 km^2 respectively; the longest travel distance between two points in the city is almost four times longer in Atlanta. Generally speaking, three key spatial factors – density, mixed-use and poly-centricity – influence the creation of proximity in cities. No single factor reigns supreme. Considered equally, they can also play an important role in increasing the use of sustainable transport modes such as walking, cycling and public transport.

A city's ability to accommodate more environmentally-friendly lifestyles is linked to a range of interrelated factors, from high rates of apartment living to low car dependency. But the primary appeal comes from the potential to link these two factors to social services, cultural amenities and economic opportunities unknown to territories that are characterised by the opposite.

Ever since economist Nicholas Stern referred to climate change as 'the greatest market failure the world has ever seen', the critical role of governments in tackling the global environmental crisis has become more obvious. New regulations, taxes and emissions trading will all have to play a key role before a more dynamic private sector fully embraces green development. At the city level, long-term strategies which utilise the inherent characteristics of cities, including their competitive advantage as energy efficient systems, will have to focus on urban form and concentrating activities, uses and functions. The spatial structure of cities is the result of a complex interaction of market forces with taxes, regulation and infrastructure: while proactive intervention for these three in particular is possible in principle, it will require integration with overall city-wide strategies at each level of governance if they are to have the desired impact. Any endorsement will also have to recognise the critical role of urban building typologies and that of accessibility based on proximity, mobility and connectivity rather than simply expanding transport infrastructure. A city's expansion into its rural hinterlands is an especially important consideration: once land is developed, it is almost impossible to convert back to open space. Thus planning will have to be reinvented as an essential component of what Anthony Giddens refers to as 'the politics of the long term', avoiding reverting to the unsuccessful models of the past.

Such successful models of change can only be brought about with, and not against, citizens. Over centuries, cities have been progressive environments embracing individual changes in behaviour – a central prerequisite for the emergence of more sustainable lifestyles. As dynamic and reflexive organisms, cities can be quickly mobilised to implement and test new approaches while receiving immediate feedback from residents. The long list of recent transport innovations is a revealing one: strategies such as congestion charging (London, Stockholm, Milan), urban cycling (Copenhagen, Bogotá, Paris), bus rapid transit systems (Curitiba, Bogotá, Istanbul) and temporary street use (Rio de Janeiro, New York, Tokyo) are paving the way for world-wide application. And they have already reduced green house gas emissions: each year Calgary's new light rail saves about 590,000 tonnes, London's Congestion Charge 120,000 tonnes and Paris' Velib bike-sharing scheme 18,000 tonnes. These instructive examples illustrate the enormous potential for political convergence around a climate policy with socio-economic urban objectives. Low carbon cities will significantly improve the quality of life long before reductions in carbon emissions will limit the effects of global warming.

To underline the urban potential of greening our societies, we must clearly differentiate between resource-intensive urban agglomerations and energy-efficient cities – not all settlements of a certain size or within a metropolitan region exhibit the core qualities of a city. But if a city can prioritise the sharing of resources, widespread use of public amenities and ultimately an energy-efficiency combined with social opportunity, city making will help provide solutions to the global environmental crisis.

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NYC Department of Transportation

New York City's 'Green Light for Midtown' is changing the way the city views its streets. These images of Herald Square show mixed-use pedestrian and cycle ways contributing to green transport corridors.